

III. REMARKS

In the Office Action (the Final Rejection), claims 1, 2, 8 and 10-13 were rejected under 35 U.S.C. 103 as being unpatentable over Gong (Automatic Parsing..), and further in view of Dimitrova (Semantic video database retrieval) for reasons set forth in the Office Action. Claims 3-6, 9 and 14-20 were rejected under 35 U.S.C. 103 as being unpatentable over Dimitrova in view of Gong for reasons set forth in the Office Action.

The following argument is presented to distinguish the subject matter of the claims from the teachings of the cited art so as to overcome the rejections under 35 U.S.C. 103 and to show the presence of allowable subject matter in the claims. This argument includes argumentation presented in the previously filed response to the Final Rejection, plus further arguments directed to the amendatory passage inserted in each of the independent claims.

In the Final Rejection, the examiner notes (Point 23 of the Action) that the prior rejection of claims 1, 2, 8 and 10-13 based on the teachings of Gong is withdrawn, and that a new ground of rejection is made based on Gong in view of Dimitrova. The new ground of rejection, as presented with respect to claim 1 (Point 7), states that Gong discloses a description means for contents of a motion picture, but fails to disclose a description means providing a description based on the shape of an object. The examiner relies on Dimitrova to disclose that the object description in a motion picture (top of page 4 of the Action) can include changing shape.

The Applicant has argued that Dimitrova does not deal with an object having a changing shape, but may regard an object as being composed of rigid components treated by separate vectors as though they are separate objects. The examiner was not persuaded by this argument (Point 23 of the Action). Applicant respectfully traverses the position of the examiner to show that the combination of the teaches of Gong and Dimitrova does not suggest the invention as set forth in any of the present claims and, in fact, would direct one away from the practice of the present invention.

In the Final rejection of claim 1 (page 3 of the Action, beginning at line 14), the examiner relies on Dimitrova to disclose object activities from which one can infer event information. Then, as noted above, the examiner concludes (top of page 4) that the Dimitrova motion picture can include changing shape for classification of pictures. A similar observation by the examiner appears at the top of page 5 with respect to claim 2. In the rejection of claim 3 (page 7, second paragraph) the examiner observes that Dimitrova uses changes in shape to assign actions of an object, where after assembling object activities, one can infer information. Similar comments are made with respect to other ones of the independent claims.

However, there are further teachings of Dimitrova that would direct one away from the practice of the present invention.

Dimitrova, in Fig. 3, presents a picture of a moving object, a person represented as a stick figure where various straight lines represent arms, legs and back. Fig. 3 also presents arrows to show relative movement among the various components (arms, legs) of the stick figure. The shape of the person, as

represented by the stick figure, can be understood only in terms of the relative orientations of the components (whether an arm points up, down, or sideways, for example). If the shape of the person, or changes in shape of the person, are to be employed as part of the signal processing operation in the communication of a video, then Dimitrova must describe some form of operation in which there is a sensing of a shape of the object, and an employing the object shape, or change of shape, in order to accomplish the communication of the video. This is not done by Dimitrova.

Dimitrova teaches (top of left column on page 223) that an object is to be regarded as rigid or consisting of rigid parts connected to each other. This is consistent with the representation of the person of Fig. 3 by a stick figure. Beginning at line 11, Dimitrova teaches that a non-rigid body is to be represented by clusters of matter, each of which is to be treated as a separate moving part (rigid object). Therefore, with reference to the stick figure of the person, as the object about which a video is to be communicated, each of the components of the object is rigid and has a fixed shape. A separate trajectory is associated with each component of the object.

In the high-level motion analysis (beginning in the middle of the left column), Dimitrova teaches an association of activity with object-trajectory representation. Recognition of an activity is based on a relative positioning among object sub-parts, relative timing among movements of the parts, and interaction among the parts. This is consistent with the representation of the stick figure in Fig. 3 of Dimitrova.

Dimitrova then proceeds to discuss recovering of a high-level motion representation, and states (top of right column, in the passage cited by the examiner) that one must identify the object components. These components are described in further detail on page 224, left column in the second full paragraph. Dimitrova lists attributes of the components such as image, description, name and shape. In other words, with respect to the stick figure representation of the object (the person of Fig. 3), it should be known that one of the sub-parts is an arm, and has an elongated shape. Dimitrova requires that, in order to receive the video of the stick figure, one must observe motion of the arms and the legs and the back of the person, and observe the timing of these motions in order to discriminate what activity is taking place (page 223, top paragraph of right column).

Thus, it is apparent that, in the communication of a video according to Dimitrova, an object is treated as a rigid object, sub-parts of the object are treated as rigid components of the object, and the respective components are processed by dealing with their respective trajectories. Upon presentation of these components and trajectories to the receiver of the video, one is able to discriminate activities of the object (the person of Fig. 3) and infer event information, according to Dimitrova.

In Gong (page 167, right col. Last full paragraph), it is stated that the system aims to decompose soccer programs into semantic primitives which enables the user to extract events of interest. Further, Gong notes (page 172, right col., middle paragraph) that for presentation of players, the system only attempts to recognize the uniform colors of the players. Gong does not rely on a determination of shape to extract data of the players. Since shape is specifically mentioned in the present claims, the

examiner combines the teaching of Gong with the above-described teaching of Dimitrova.

It is important to notice, that while shape is listed by Dimitrova as one of the attributes of the object, the rigid components of the object can not undergo a change in shape, and that, in the foregoing formulation of the Dimitrova process of communication of a video, including the mathematical description, shape and a change of shape do not form a part of the Dimitrova process.

In contrast, in the present invention, as shown by present claim 1, the claim calls for means for describing each of a plurality of objects on a motion picture by position on a reference plane and a predefined type of actions. The claim states the describing means provide a description based on changes in the shape of an object. Further, the claim calls for means for describing each of a plurality of scenes in the motion picture, and teaches that this is accomplished by using the means for describing each of the plurality of objects in respective ones of the scenes. It is clear from the foregoing teachings of claim 1 that the changes in the shape of an object do play a role in the communication of the motion picture.

By way of further example, the method of present claim 3 calls for setting a description unit based on a predefined type of actions of each of the objects by using changes in shape of each object so as to assign actions of each object as respective behavioral sections. Clearly, in this claim, the changes in the shape of an object play a role in the communication of the motion picture.

However, in the Advisory Action, the examiner indicated that, even though the components of the Dimitrova object are rigid, the changing positions of the components (which represent walking or other activity) constitute a changing shape of the overall object. This, in combination with the passage of Dimitrova (page 223, right col., top paragraph) mentioning identification of object components with shape and other features, is apparently the basis for the examiner's combination of the teachings of the two references, particularly since the claims make reference to a change in shape of an object without further definition of the term "shape".

Accordingly, in order to provide a further distinction between the claim language and the teachings of the cited art, each of the independent claims is amended to state that, with respect to the using of changes in shape of each object, the shape of the object is determined by the silhouette of the object.

Support for the amendment is found in the present specification. The present invention allows meaning of an object of a description unit to be preserved by giving meaning to changes in shape as behavior of an object due to such changes in shape (present specification, page 13 at lines 4-7), wherein actions of the object are classified based on silhouette of the object which represents changes in shape of each object (page 14 at lines 12-14). Utilization of silhouette in the practice of the present invention is disclosed also on page 17 at lines 1-7, and on page 18 at line 9.

Upon comparing the teachings of the present invention, as set forth in the amended claims, with the foregoing teachings of Dimitrova, as well as with the combined teachings of Dimitrova

and Gong, Dimitrova does not teach that the objects change their shapes and that one utilizes these changes in shape as a step in communicating a motion picture. Rather, Dimitrova teaches that the objects and their components are rigid. Dimitrova represents the rigid components of his objects by vectors, and the changes in the vectors are all that Dimitrova has to provide information on shape.

This representation of Dimitrova is contrary to the representation by silhouette as set forth in the present claims. The silhouette is searchable in a search engine, and is far more intuitive for providing a better understanding of an image than the components of vectors (as in Dimitrova) describing the orientation of an object, or the location of a centroid of the limb of a person.

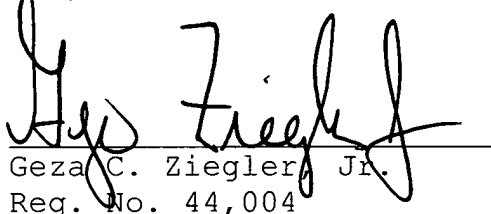
Upon an attempted combination of Dimitrova with Gong, it is noted that Gong (Abstract) teaches the construction of a model of an image, such as a soccer game, for which a video image is to be communicated. It is urged that the teaching of Dimitrova would direct one away from the practice of the present invention, and provides no motivation to combine the teachings of the two references. There is no suggestion in a combination of their teachings to employ silhouette data of image objects. Nor does Gong provide a motivation to combine the two references, considering that Dimitrova teaches away from such combination.

Therefore, it is believed that this argument and amendment has overcome the grounds of rejection of the present claims, and that the present claims have allowable subject matter.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record, and are in proper form for allowance. Accordingly, favorable reconsideration and allowance is respectfully requested. Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

A check in the amount of \$910.00 is enclosed for a one-month extension of time and RCE fee. The Commissioner is hereby authorized to charge payment for any fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,


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28 MARCH 2006
Date

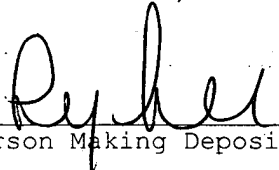
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